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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CLOW, LORI A	

ART UNIT	PAPER NUMBER
1631	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/933,580	SZALMA ET AL.	
	Examiner	Art Unit	
	Lori A. Clow, Ph.D.	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13 and 20* is/are pending in the application.

4a) Of the above claim(s) *20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicants' arguments, filed 14 March 2005, have been fully considered. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Claims 13 and 20 are currently pending. Claims 1-12 and 14-19 have been cancelled.

Election/Restriction

Newly submitted claim 20 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claim 20 is directed to a method of assessing toxicity of a proposed pharmaceutical intervention. The elected invention is directed to a method of identifying a target protein for pharmaceutical intervention, which comprises different method steps and a different outcome than recited in claim 20.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 20 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 13 remains rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, for the reasons set forth in the previous Office Actions.

In *In re Wands* (8 USPQ2d 1400 (CAFC 1988)) the CAFC considered the issue of enablement in molecular biology. The CAFC summarized eight factors to be considered in a determination of "undue experimentation". These factors include: (a) the quantity of experimentation necessary; (b) the amount of direction or guidance presented; (c) the presence or absence of working examples; (d) the nature of the invention; (e) the state of the prior art; (f) the relative skill of those in the art; (g) the predictability of the art; and (h) the breadth of the claims.

In considering the factors for the instant claims:

a) In order to practice the claimed invention one of skill in the art must be able to select a target protein and retrieve a fingerprint to compare with other generated fingerprints for proteins that represent an entire genome and identify said potential target protein as a target protein for pharmaceutical intervention. For the reasons discussed below, this constitutes undue experimentation.

b) and d) The specification provides no direction on how detecting differences between the pathogen protein fingerprint and a human protein fingerprint elucidates information about a potential target for pharmaceutical intervention. The specification states that the "protein/ligand interaction comparisons comprise identifying the nature of the ligand interaction with each protein in the comparison. Typically the protein/ligand interaction is characterized by a bonding affinity between each protein and each ligand. This could be binary or it could be a numerical variable, such as an equilibrium binding constant or a binding energy (page 7, beginning line20)". Without guidance on the specific generation of the binding constant or the binding energy or perhaps some other variable that would represent a fingerprint, the present invention is not enabled. The specification at page 7 describes an interaction between four ligands and five proteins, which are not named. The nature of the interaction is characterized by bonding affinities and protein annotations are made based upon the interaction assessment and a pattern is established unique to a certain protein. It is unclear from these steps how one would get to step (f) from steps (a)-(e) in the instant claims. How does the protein fingerprint tell anything pertinent to a target for pharmaceutical intervention? There are no parameters that indicate what the binding affinity values mean in terms of pharmaceutical intervention. For instance, is binding a positive indicator or a negative indicator? Are degrees of binding assessed? What is the correlation between the fingerprint and a disease, for instance? How does detecting differences in fingerprints tell one anything about a potential target? Just because binding affinities are different does not indicate that the random proteins from the human genome and the proteins from the pathogen are in any way similar or could be potential targets. At what point

would one of skill in the art know if the pathogen target is analogous to the human target? There are several thousand proteins in the human genome. Are all of these analyzed?

c) The specification provides no working examples of the said method.

e) and g) It would have been well known in the art that descriptors function to characterize molecules so that they may be compared to identify potential drug candidates. The research in this field is quite extensive and there are several computational programs that implement comparisons of descriptors in order to characterize biological activity. However, absent the guidance on how exactly to perform the broad steps of this invention, one of skill in the art would not have sufficient teaching in order to retrieve and interaction fingerprint and compare it with another for the several thousand proteins in the human genome, for example.

The prior art, for instance, teaches that methods to describe the similarities of molecules have gained increasing interest in rational drug design. Beyond database searching there are many applications of similarity metrics. There are numerous ways to assess the similarity of molecules, **depending on the choice of molecular properties** to compare (Briem et al. J. Med. Chem. (1996) Vol. 39, pages 3401-3408). Briem et al. go on to describe their particular method to compare molecules, known as a DOCK-generated fingerprint method. As is quite clear in this method, the steps are detailed in terms of the generation of the fingerprints and similarity indices (see page 3402 and 3403 formulas). However, the instant specification does not provide the details in such a way that one of skill in the art would know what formulas to use, what databases to use, how to fit them together or distinguish them from any other protein comparison method that exists in the prior art. The generic nature of the specification does not enable one to practice the methods steps of the instant claims.

f) The skill of those in the art of bioinformatics and pharmacogenomics is high.

h) The claims are broad because they are drawn to a method of generating a fingerprint from a pathogen and from proteins in the human genome and somehow detecting differences that are supposed to yield a target for pharmaceutical intervention. The skilled practitioner would first turn to the instant specification for guidance to practice this method. However, the instant specification does not provide specific guidance to practice these embodiments. As such, the skilled practitioner would turn to the prior art for such guidance however the prior art shows that there are numerous methods based upon protein interactions.

For the reasons set forth above it would require undue experimentation for one of skill in the art to practice the claimed invention therefore the claims are not enabled.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 now recites "expressed by the human genome". There is insufficient antecedent basis in the claim for "the human genome". Clarification is requested.

Conclusion

Applicant presents no new arguments with regard to the enablement rejection set forth in the previous Office Actions. Applicant states that in the interview of 23 February 2005 claim 13 was discussed. "During the interview, it was suggested that claim 13 be amended to more clearly define the nature of the target protein, the proteins compared to the target protein, and the nature of the fingerprint comparison". This is an accurate representation of the interview discussion and the Examiner appreciates Applicants attempts to clarify the method. However, for the reasons stated above, the claims remain rejected under 35 USC 112, 1st paragraph for failing to comply with the enablement requirement.

Inquiries

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The Central Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lori A. Clow, Ph.D., whose telephone number is (571) 272-0715. The examiner can normally be reached on Monday-Friday from 10 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel, Ph.D., can be reached on (571) 272-0718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system

provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

Marjorie A. Moran
4/18/05

MARJORIE A. MORAN
PRIMARY EXAMINER

April 15, 2005
Lori A. Clow, Ph.D.
Art Unit 1631
Lori A. Clow